DOCUMENT RESUME

ED 470 133 IR 021 573

AUTHOR Macedo, Peter; Snider, Richard; Penny, Samantha; Laboone, Emet

TITLE The Development of a Model for Using E-Portfolios in Instructional Technology Programs.

PUB DATE 2001-11-00

NOTE 10p.; In: Annual Proceedings of Selected Research and Development [and] Practice Papers Presented at the National Convention of the Association for Educational Communications and Technology (24th, Atlanta, GA, November 8-12, 2001). Volumes 1-2; see IR 021 504.

PUB TYPE Reports - Evaluative (142) -- Speeches/Meeting Papers (150)

EDRS PRICE EDRS Price MF01/PC01 Plus Postage.

DESCRIPTORS Computer Uses in Education; *Educational Technology; Graduate Study; Higher Education; Instructional Materials; Portfolio Assessment; *Portfolios (Background Materials); Program Development; *Student Evaluation

IDENTIFIERS *Electronic Portfolios; *Virginia Polytechnic Inst and State Univ

ABSTRACT

E-portfolios have an ease of use that former paper-based portfolios do not. Virginia Polytechnic Institute and State University uses e-portfolios as a method to assess students in the Instructional Technology graduate program. A core of volunteer graduate students assumed the responsibility of designing a model for using e-portfolios based on the new Association for Educational Communications and Technology (AECT) standards. This paper explores the process and decisions involved in developing a specification for an easy-to-use e-portfolio system to assess, evaluate and display graduate students' work. Issues discussed include the nature of the students' role in the development of the model and their subsequent recommendations for preserving a well-defined structure for the e-portfolio to meet the needs of the faculty without sacrificing the ability of the students to be creative with the display of the content. Implemented items form this investigation included a template-based system with a checklist of required components for the e-portfolio. Included in the recommendations is a data-drive approach that separates the content from the structure of the e-portfolio, making it possible to easily enter the information and re-purpose it for a variety of formats and uses. (Author)

Reproductions supplied by EDRS are the best that can be made

ED 470 133

The Development of a Model for Using E-Portfolios in Instructional Technology Programs

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

P Harris

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

By: Peter Macedo, Richard Snider, Samantha Penny & Emet Laboone

IR021573

BEST COPY AVAILABLE

The Development of a Model for Using E-Portfolios in Instructional Technology Programs

Peter Macedo
Richard Snider
Samantha Penny
Emet Laboone
Virginia Polytechnic Institute and State University

ABSTRACT

E-portfolios have an ease of use that former paper-based portfolios do not. Virginia Polytechnic Institute and State University uses eportfolios as a method to assess students in the Instructional Technology graduate program. A core of volunteer graduate students assumed the responsibility of designing a model for using e-portfolios based on the new AECT standards. This paper explores the process and decisions involved in developing a specification for an easy-to-use e-portfolio system to assess, evaluate and display graduate students' work. Issues discussed include the nature of the students' role in the development of the model and their subsequent recommendations for preserving a well-defined structure for the e-portfolio to meet the needs of the faculty without sacrificing the ability of the students to be creative with the display of the content. Implemented items from this investigation included a template-based system with a checklist of required components for the e-portfolio. Included in the recommendations is a data-driven approach that separates the content from the structure of the e-portfolio, making it possible to easily enter the information and re-purpose it for a variety of formats and uses.

Background

The professional development portfolio was conceptualized for use by the Instructional Technology (IT) Program at Virginia Tech in 1993 as a means for faculty in the department to assess student work at different stages of matriculation. The portfolio was also a way for the program to gauge its current practices of teaching and learning. For students, the portfolio served as an excellent tool to archive and showcase their work. The early portfolios were displayed in non-electronic form. Students would present the work they completed in class during program-wide examinations (qualifying exam, preliminary exam, final defense). As technologies advanced, the requirement was modified to give students the option of creating an electronic portfolio. This was again modified later to make an electronic portfolio mandatory. The faculty also adopted the original AECT standards that consisted of seven primary competency areas. Although all of the portfolios had the same seven topical headings, the design for these portfolios was left to the discretion of each individual student.

When the new AECT standards came out in 2000, the faculty adopted them for use with the electronic portfolios. The electronic portfolio, however, continued to have several shortcomings. The lack of guidelines led to a great deal of variation in interpreting the AECT standards and in formatting the portfolios. In addition, students had many questions about how to develop their portfolios and faculty members had a difficult time comparing the portfolios across students. As a result, the Professional Development Portfolio (PDP) committee was formed to attempt to incorporate the new AECT standards into the departmental PDP and to find solutions for these problems.

Beginning of PDP Committee

The Professional Seminar committee, which plans seminars for IT graduate students, developed a seminar on the professional development portfolio anticipating the changes in the AECT standards. During this seminar, the new AECT standards were presented and a number of students who had already created electronic portfolios volunteered to show their work to new students in the program who were going to develop portfolios in the near future. Based on the comments from both students and faculty during this seminar, it became obvious that the portfolios were very different from student to student, which made it difficult for faculty to compare the PDPs. As a result, a student-led committee, which included a faculty advisor, was created to propose a more systematic PDP model for use by future students. Although it still had to be approved by the faculty, this "bottom-up" approach allowed students to have a voice in making changes to enhance the program.

The PDP Committee subsequently went to work on researching electronic portfolios. Researching the use of portfolios, both electronic and non-electronic, was undertaken through three methods: reviewing literature, evaluating other IT programs, and interviewing IT faculty and students.

Literature Review

In reviewing the literature, the committee investigated portfolios and their definitions, their uses and advantages, and their development. The committee also followed this initial review with an investigation of the AECT standards and their suitability as the assessment measure for the professional development portfolio.

Much of the literature found on the topic of portfolios was in support of their use in education. Portfolios are defined as selective and purposeful collections of student work made available in either electronic or non-electronic formats (Adams & Hamm, 1992). Portfolios provide meaningful documentation of an individual's abilities and represent a "learning history" over a period of time (Meisels, 1994). The use of portfolios in education leads to learning environments that are more student-centered because students accept more responsibility and become the agents of their own education (Paris, 1992)

Barrett (2000) explores the steps necessary for creating portfolios. These steps include deciding on an area of assessment, selecting assessment measures, collecting and selecting content, reflecting on and organizing the content, and presenting the content. The committee decided to adopt this process as a method to guide the subsequent development of the PDP model.

In the investigation of the suitability of using the AECT standards as the assessment measure for the portfolios, a primary question arose: why did the department of Instructional Technology at Virginia Tech choose to use the competencies and what have they to gain from including them in the professional development portfolio? The faculty at Virginia Tech chose to use the AECT competencies because of the reputation AECT has in the instructional technology field and its leadership in promoting professionalism in the field through the National Council for Accreditation of Teacher Education (NCATE). In addition, the IT faculty at Virginia Tech felt that they gained a measure of professional accountability through the use of established standards.

Further investigation of the AECT Standards addressed several areas. These areas included a developmental history of the AECT standards, the theory behind the standards, and the standards themselves. AECT standards came into existence in the 1970s when then president Robert Heinich appointed task forces to look into accreditation and certification issues addressing "concerns for the place of instructional technology in teacher education and for the professional preparation of media personnel" (Association of Educational Communications and Technology, 2000). As the years passed, standards, or guidelines as they were then called, were approved and revised. Finally in 1996, NCATE requested a change to performance-based accreditation, thus requiring AECT to make revisions to the standards once again. AECT revised their 1994 standards to reflect NCATE's request. In order to do so, AECT used the major domains of the field as defined by *Instructional Technology: The Definitions and Domains of the Field*, written by Seels and Richey in 1994 (see Figure 1). The new standards, which were used for this project, were approved by both AECT and NCATE in 2000 (Association of Educational Communications and Technology, 2000).

The AECT standards were based primarily on the theoretical framework contained in the work found in two books: *Instructional Technology: The Definition and Domains of the Field* (Seels & Richey, 1994) and *The Knowledge Base of Instructional Technology: A Critical Examination* (Richey, Caffarella, Ely, Molenda, Seels, & Simmonson, 1993). The first book offers a definition of the field, or assessment area for the portfolio, and a description of the domains and sub-domains of the field. The second book provides the theoretical underpinnings of each domain. Seels & Richey's definition of "instructional technology" is as follows:

> Instructional Technology is the theory and practice of design, development, utilization, management and evaluation of processes and resources form learning... The words Instructional Technology in the definition and a discipline devoted to techniques or ways to make learning more efficient based on theory but theory in its broadest sense, not just scientific theory... Theory consists of concepts, constructs, principles, and propositions that serve as the body of knowledge. Practice is the application of that knowledge to solve problems. Practice can also contribute to the knowledge base through information gained from experience... Of design, development, utilization, management, and evaluation refer to both areas of the knowledge base and to functions performed by professionals in the field... Processes are a series of operations or activities directed towards a particular result... Resources are sources of support for learning, including support systems and instructional materials and environments... The purpose of instructional technology is to affect and effect learning (Seels & Richey, 1994, pp. 1-9).

Figure 1 illustrates how the field's theoretical underpinnings are divided into five domains (Seels & Richey, 1994). The related sub-domains are listed under each domain.

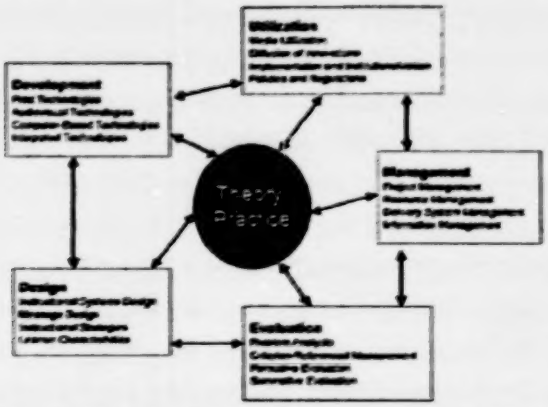

Figure 1. Domains of the Instructional Technology field. (Seels & Richey, 1994)

In terms of the standards themselves, there are two categories: the initial programs in Educational Communications and Instructional Technology (ECIT) and the advanced programs in Educational Communications and Instructional Technology. The initial ECIT programs are the basic entry into the field and are typically masters level programs that lead to certification. The advanced ECIT programs focus on knowledge and skills that go beyond the initial program. There are five domains in each program: development, utilization, design, management, and evaluation. The definitions of the domains are as follows:

Design refers to the process of specifying conditions for learning. Development refers to the process of translating the design specifications into physical form... Utilization refers to the use of processes and resources for learning... Management refers to processes for controlling instructional technology... Evaluation is the process for determining the adequacy of instruction. (Seels & Richey, 1994, pp. 24-43).

The standards are the same for both programs; it is in the implementation or performance of the standards that the programs differ. The difference between the two is of quantity and depth. The advanced program requires more activities and higher quality performance than the initial program.

Once the literature review was complete, The PDP committee was convinced of the usefulness of portfolios in education. In addition, the committee agreed that the AECT standards justified their use with a well-defined area of assessment (the instructional technology field), a solid theoretical base and a stringent review and accreditation process. The committee recommended the use of the initial ECIT standards as the framework for the master's level Instructional Technology students' portfolios and the advanced ECIT standards as the framework for the doctoral students' portfolios at Virginia Tech.

Other IT Programs

In order to complement the literature review, the committee attempted to evaluate the use of electronic portfolios by reviewing websites of eight well known IT programs. However, the use of portfolios was not well documented on the web, so the committee contacted representatives of each program directly. Members of the committee e-mailed a contact person from each of the IT programs requesting information about their use of portfolios. The results from evaluating other programs did not provide any consistent approach. Other programs indicated that they: 1.) did not use portfolios; 2.) had an optional portfolio; 3.) had an analog/electronic portfolio option; 4.) created their own standards; and 5.) used AECT or other organizational standards. These findings only served to substantiate the committee's purpose and commitment to developing a more consistent set of PDP standards.

Faculty/Student Interviews

Interviewing several members of the IT program's faculty provided valuable insight as to the rationale behind the use of portfolios and their needs in regards to the portfolios. Interviews with students in the program also provide information about their needs as well. Although the interviews were done in an informal manner, the anecdotal information the faculty and students provided helped the committee to develop guidelines for use with the portfolios. Much of the information gathered from those interviews was used in the writing of this document and in the subsequent implementations and recommendations that came from this investigation.

Needs Analysis

Once a framework was adopted for the electronic professional development portfolio model, the committee began to investigate the specific needs of the primary stakeholders, the faculty and the students. The primary goal of

the team working on the model was to identify these needs and to propose a portfolio solution that would accommodate each set of needs as effectively as possible.

Many of the faculty noted the growth they witnessed from the time they first saw a student's portfolio at the qualifying stage to the final defense. Students also recognized their own growth throughout the process and felt as if they had a way to show their work. Moreover, students discussed how employers often appreciated their level of preparedness. Nevertheless, although both the faculty and students had good things to say about the use of portfolios in the IT program, it soon became obvious that the portfolios, as they existed, did not completely meet their needs.

Faculty Needs

The faculty analysis resulted in three specific areas in which needs were expressed with regard to the PDP. These areas include: 1.) Assessment, 2) Accessibility, and 3.) Ease of Use.

Assessment

For the faculty, the primary area of importance in terms of the PDP is the ability to assess the work that students placed in the portfolio. Faculty members decided that a portfolio based on the AECT standards would be a useful method for assessing the overall achievements of students in the program both on their own merits and in comparison to other students. The faculty put forth general requirements for items to include in the portfolio for assessment, consisting of courses taken, activities performed, and products produced. However, as the PDP currently exists, the faculty has not provided specific requirements as to the manner in which the material is to be presented. This was done, in part, to provide the students with freedom to be creative with the design of their PDPs. In many respects, the PDP became, from the student's perspective, the culminating design project of the degree program. The lack of a defined structure, however, has made it difficult for the faculty to be able look at the portfolios and assess the quantity and quality of work from one student to another.

The ability to easily assess the quality of a student's work in comparison to other students using the PDP necessitates that the portfolios be as consistent as possible. This consistency can be achieved through both content and format guidelines. Presently, however, such guidelines have not been created due to the differing nature of student and faculty needs with regard to the PDP. To establish stringent guidelines with regard to content and format may hinder student creativity and also their ability to customize the PDP for specific job searches. Taking some of the control of the development of the PDP away from the students may force them to double their work by creating two portfolios – one for the instructional technology faculty and one for prospective employers.

Accessibility

The faculty also indicated that the portfolios provided by the students needed to be easily accessible. When the portfolios were integrated into the instructional technology department, they were primarily paper-based. Eventually, they were moved to their current electronic form in order to make them easily accessible to the faculty. However, current lack of specific electronic guidelines with regard to how the PDPs are packaged does not ensure easy access from one computer to another or one application to another, such as a browser.

Ease of Use

Finally, the faculty indicated that it would be desirable if the material in the student PDPs could be easily used for data purposes. An example included the ability to track classes, experiences and projects through a database. In such an environment, theses variables can be related and compared across students over periods of time.

Student Needs

The student analysis resulted in four specific areas in which needs were expressed with regard to the PDP. These areas include: 1.) Clear definition of requirements, 2.) Flexibility for creativity, 3.) Usability for both academic and job related activities and 4.) Easy modification of content.

Defined requirements

Students used the PDP primarily as a means to fulfill the requirement set out in the series of oral departmental exams. The main requirement set forth by the faculty was that the PDP be web-based and that all classes, projects and professional experiences be represented. The required structure of the document was only that these items be represented so that it was apparent how each related to the original seven competencies detailed by AECT. This limited set of requirements allowed for a great deal of variety in the design of PDPs and promoted confusion among the students as to what was required. Students' inaccurate understanding of the PDP made it clear that it would be helpful to make the requirements more comprehensive. In addition, well-defined structural requirements would reduce the amount of time spent by the students in development of their own PDP. This is especially the case for students who are not as experienced in web or graphic design.

Flexibility to be creative

The original setup allowed for a great deal of personal freedom in structure and displays. Although the PDPs had a similar outline-based structure that consisted of an introduction with a definition of the PDP followed by seven sets of lists, the overall design was unique from student to student. Flexibility was exercised in visual aspects of the site such as images and color scheme. The students wanted guidelines, but also desired the flexibility to design the "look and feel" of their portfolios.

Usability for both academic and job related activities

It was important for students to have a PDP that would also work as a non-academic portfolio. Often the structure used to meet the needs of the IT faculty at Virginia Tech was not appropriate for prospective employers. As a result, students often had to re-design their portfolios for use in job searches. Since the content and format were tied together in the electronic portfolios, this required much time and effort.

Easily modifiable

The PDP is continuously modified throughout its development. A well-designed PDP should allow for easy addition of content, as well as resorting of items already included, without the need to recreate the document format or navigation systems.

Solutions

The recommendations of the group came in three forms. The first piece was a prototype PDP to be used as a model for future PDPs. A "how-to" manual was developed for students to guide them through creating their own PDPs. The last piece consisted of a set of recommendations for future investigation.

Prototype

The prototype was a website developed from content in an already existing PDP. A template-based system was recommended in order to provide clearer guidelines for the students as they develop their PDPs. Though this recommendation removes the students' flexibility in the aesthetic aspects of their PDP, a more standardized model had the benefit of reducing ambiguity in the development of the PDP. The imposition of these content and format guidelines also meets the need of the faculty to easily locate, analyze, and compare the work of students across PDPs. Through the use of the template, the content is more consistent, comparable, and thus, more assessable.

In the prototype, each page on the site contains a side bar navigation system that allows the viewer to link to any of the other major sections within the site. As shown in Figure 2, the site contained 5 major sections: (1) Entry page, (2) Vita, (3) Checklist, (4) Competency listing, and (5) Referenced items.

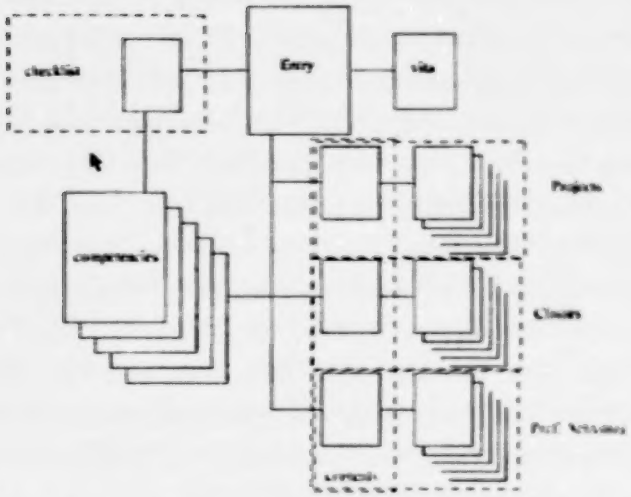

Figure 2. PDP Site Map

The entry page was set up as an introduction to the individual student's PDP. A personal statement is the most prominent content of the page. The student has the ability to add links to outside personal information from the entry page. (Faculty felt that sensitive personal information should be removed from the entry page, as the PDP site is not secure.)

Faculty and students both felt that a vita should be included as a part of the PDP as it is considered to be a standard element in the professional development of an Instructional Technology student. Since there are already established guidelines for vitas, the prototype simply focused on a location in the site to place the vita, not on how to develop one.

The checklist identifies all of the required components in each of the major areas of the PDP in a table (see Figure 3). The checklist allows the students to identify which components have been included in the PDP by inserting a checkmark graphic into the appropriate cell of the table. This chart is sorted by competency and type of referenced item (classes, professional activities, projects). This method allows the faculty to quickly judge the breadth of the student's experiences as defined in the portfolio. In addition, it provides the students with a clear set of guidelines indicating what is required in the portfolio.

Figure 3. PDP Checklist

Classes	Professional Activities	Projects	Competency Area
			Design
✔	✔	✔	- Instructional Systems Design
✔	✔	✔	- Message Design
✔	✔	✔	- Instructional Strategies
✔	✔	✔	- Learner Characteristics

The competency section of the site details each of the 5 categories of the AECT standards. Like the checklist, this section is included to assist the students in defining their experiences as they relate to the profession. General as well as itemized definitions as put forth by AECT for each competency are listed on the pages. At the end of each page, there are links to classes, projects, and professional activities that relate to that competency.

In addition to linking to the referenced items through the competency pages, the PDP contains three pages that list out all items by category. The categories for the referenced items are classes, projects, and professional activities. This will allow the viewer to isolate types of work (e.g., class projects, and professional activities) across the competencies. This also allows for alternate groupings and classifications to be set up if needed. Creating a new table of contents, and linking the appropriate items to the contents page, will allow for a completely new structure for a portfolio for viewers other than the IT faculty. If the student wishes to modify the appearance of the page, only the templates for the sections need to be modified and the whole site will reflect the changes.

BEST COPY AVAILABLE

"How-to" document

The "how-to" document was created as a guide for students to creating their own PDPs. It contains explanations of competencies, descriptions of the required elements, and recommendations for development and maintenance of the PDP. The competencies describe in detail the AECT areas that the students are expected to use as a framework for populating the content in the PDP. This section also describes how the Instructional Technology department will work with students if they wish to emphasize specific components of these competencies. The description of required elements outlines what the faculty expects from the students in terms of competencies and other activities. These other activities include the development of a vita, consulting, teaching, researching, and mentoring newcomers to the profession. The development and maintenance section includes recommendations for setting up a website to house the PDP and techniques for modifying and updating the content in the PDP. This document provides clear guidelines and developmental procedures for students. In addition, by clearly laying out these guidelines, the faculty has a reference point with which to evaluate the portfolios.

Future Recommendations

In the discussion of how to develop a PDP, the group made recommendations for future exploration of several concepts. The committee began to explore standard formatting structures for the PDP, such as HTML or XML and the use of cascading style sheets for formatting. These structures could ensure consistency of PDPs across computer platforms and browsers. The committee also investigated the possibility of the PDP structure existing in a database-driven environment that separates the content of the PDP from the recommended template. By having all of the content entered into the database and then automatically populated into the template, the faculty would be able to isolate and/or compare specific pieces of content within a database system. This would facilitate management and organization of large amounts of data from the PDPs from a variety of students across many years. In such a system, students adding content would not need to worry about formatting. The recommended template would automatically be populated with the content maintained in the database. In order to take into account the needs of different students, multiple templates could be offered for the students to use in the data driven system. Pre-designed as well as customizable templates could be chosen as options for PDP display. This would begin to accommodate the individual design needs of the students without forcing them to re-enter their content.

Summary

In the development of the PDP model, both the process and the outcomes provided positive benefits to the students and the faculty. The students, through the committee, took ownership of the development of the PDP model. In addition, both the students and the faculty had their needs met through the analyses and recommendations developed by the committee. More work in needed in the development of this model, but the committee has developed a solid framework to guide future exploration.

References

Adams, L. & Hamm M. (1992). Portfolio assessment and social studies: Collecting, selecting, and reflecting on what is significant. Social Education, 56, 103-105.

Association of Educational Communications and Technology. (2000). NCATE program standards: Initial and advanced programs for educational communications and technology. AECT. Available: http://www.aect.org/Affiliates/National/Standards.pdf [2000, November 20].

Barrett, H. C. (2000). Strategic questions: what to consider when planning for electronic portfolios. Learning and Leading with Technology, 26(2), 6-13.

Meisels, S. J. (1994). Performance in context: Assessing children's achievement at the outset of school. In A. Sameroff & M. Haith (Eds.), Reason and responsibility: The passage through childhood. Chicago: University of Chicago Press.

Paris, S. G. (1992). Reflections on learning. In R. Smith and D. Birdyshaw (Eds.), Perspectives on Assessment, Volume 1, 209-219.

Richey, R.C., Caffarella, E.P., Ely, D.P., Molenda, M., Seels, B.B., & Simonson, M.R. (1993, January). The knowledge base of instructional technology: a critical examination. Paper presented at the Annual Convention of the Association for Educational Communications and Technology, New Orleans, LA.

BEST COPY AVAILABLE

Seels, B. and Richey, R. (1994) Instructional Technology: The Definition and Domains of the Field. Washington, D.C.: Association for Educational Communications and Technology.

10

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").